DAKOTA COLLEGE AT BOTTINEAU

COURSE SYLLABUS

Course Prefix/Number/Title: DENT 119 Dental Radiology Lecture

Number of Credits: 3

Course Description:

This course provides students a comprehensive foundation for the safe and effective use of radiation in the dental practice. Radiation basics, including radiation protection, radiation equipment, and concepts of imaging in both intraoral and extraoral radiography will be presented. Normal anatomical landmarks and pathologies will be studied.

Pre-requisites: The student must be accepted into the Dental Assisting or Dental Hygiene program.

- DENT 116 Dental Anatomy

Co-Requisites:

- DAST 122 Radiology Lab

Course Objectives:
Upon the successful completion of this course the dental program student will be able to do the following:

1. Describe radiation basics including radiation: history, physics, biology, characteristics and dental x-ray image characteristics.
2. Identify biological effects of ionizing radiation and protective measures to protect both patients and operators.
3. Describe radiography equipment for conventional, digital and panoramic radiography.
4. Identify film imaging basics including composition of x-ray film, film processing and film mounting and viewing.
5. Describe dental radiographer basics including patient education, legal issues and quality assurance in the dental practice.
6. Describe intraoral technique basics including paralleling, bisecting and bite-wing techniques
7. Describe extraoral Imaging basics including panoramic and three-dimensional digital imaging.
8. Identify common radiological errors on conventional and dental imaging and identify ways to correct these errors.
9. Identify normal anatomical landmarks and pathologies on intraoral and extraoral dental images

10. Describe image interpretation basics including identification of restorations, dental materials, foreign objects, caries, periodontal diseases, trauma, pulpal lesions and periapical lesions.
11. Identify federal and state regulations pertaining to radiographic services offered.

Dental Assisting Student Learning Outcomes addressed in this course

1. **Competently execute dental assisting skills**: Utilize current guidelines for infection control, occupational safety, and perform four-handed chairside dental assisting duties and advanced functions as permitted by the North Dakota Board of Dentistry.

2. **Maintain dental and business office records**: Ensure compliance with HIPAA regulations while managing dental office records effectively.
3. **Apply legal and ethical standards**: Adhere to the North Dakota Dental Practice Act and exhibit professionalism in all interactions with patients, coworkers, and other healthcare professionals.
4. **Provide compassionate and culturally aware care**: Deliver dental assisting services with respect and sensitivity to cultural diversity.

Dental Assisting Program Goals:

1. Earn and maintain full accreditation status according to the Commission on Dental Accreditation (CODA).
2. Admit 100% (12/12) qualified dental assisting students annually according to Dakota College Bottineau's dental assisting program acceptance criteria.
3. Maintain an annual program completion rate of 92% (11/12).
4. Maintain an annual job placement rate of 92% (11/12).
5. Maintain employer satisfaction rate of 90% with readiness skills and content preparation of graduates.

Dental Hygiene Student Learning Outcomes addressed in this course

1. Provide patient centered, comprehensive, evidence-based dental hygiene care to a diverse socioeconomic, educational, and cultural patient population.
2. Apply the principles of professional and ethical standards in providing dental hygiene care to individuals of all populations.
3. Provide students with opportunities for interprofessioinal community health promotion.
4. Exhibit professionalism and communicate effectively with patients, coworkers, and other healthcare professionals.
5. Engage in professional activities and lifelong learning.

Dental Hygiene Program Outcomes

1. Prepare highly qualified dental hygiene professionals by providing up-to-date, high quality academic and clinical dental hygiene education.
2. Provide a competency-based education.
3. Provide students with opportunities for interprofessional community health promotion.
4. Earn and maintain full accreditation status according to the Commission on Dental Accreditation.
5. Incorporate emerging technologies to enhance quality dental hygiene care.
6. Prepare students to engage in professional activities and lifelong learning.

Instructor: Dr. Marvin Zerr DDS

Office: N/A

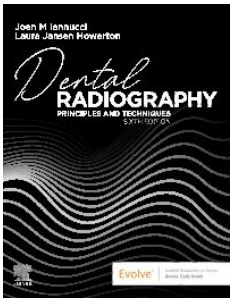
Office Hours: Available upon request

Phone: N/A

Email: marvin.zerr@dakotacollege.edu

Lecture Schedule:
This course meets face-to-face 3 hours per week for 16 weeks.

Textbook(s):
Required:
Ianucci, J., Howerton, L. *(2022). Dental Radiography: Principles and Techniques.* 6th Ed., St. Louis, MO. Elsevier. ISBN: 978-0-323-69550-3



Supplemental:
Robinson, D. (2023). *Modern Dental Assisting.* 14th Ed. St. Louis, MO. Elsevier. ISBN: 978-0-323-82440-8

Syllabus created for DCB by K. Pladson Oct. 2023-Revised by R. Hill June 2024

Course Requirements:
Attendance is mandatory in all lectures.
Weekly online assignments, class activities, case studies
Tests- (15) every other week
Final exam
The student must earn a letter grade of "C" or above to continue in the dental assisting or hygiene program.

Tentative Course Outline:

Week 1	Radiation History, Radiation Physics
Week 2	Radiation Biology, Radiation Protection
Week 3	Radiation Characteristics, Dental X-Ray Image Characteristics
Week 4	Dental X-Ray Equipment, Digital Imaging
Week 5	Dental X-Ray Film, Film Processing
Week 6	Film Mounting and Viewing
Week 7	Patient Relations and the Dental Radiographer, Patient Education and the Dental Radiographer, Legal Issues and the Dental Radiographer
Week 8	Quality Assurance in the Dental Office, Introduction to Dental Imaging Exam
Week 9	Paralleling Technique, Bisecting Technique, Bitewing Technique
Week 10	Exposure Errors, Angulation, and Periapical Technique Errors, Occlusal and Localization Techniques, Imaging of Patients with Special Needs
Week 11	Panoramic Imaging, Extraoral Imaging, Three-Dimensional Digital Imaging
Week 12	Normal Anatomy Intraoral Images, Normal Anatomy Panoramic Images
Week 13	Introduction to Image Interpretation, Descriptive Terminology
Week 14	Identification of Restorations, Dental Materials and Foreign Objects
Week 15	Interpretation of Periodontal Disease, Interpretation of Trauma, Pulpal Lesions and Periapical Lesions
Week 16	Final Exam Week

General Education Competency/Learning Outcome(s) <u>OR</u> CTE Competency/Department Learning Outcome(s):
Employs industry-specific skills for workplace readiness.

Relationship to Campus Focus: Nature, Technology, and Beyond
Dakota College Bottineau dental programs are designed to prepare students to meet the needs of communities by applying evidence-based decision making, using cutting-edge technology, and integrating quality and safety competencies into their dental programs. Each course within the program serves as a foundation for clinical practice in the dental assisting and dental

hygiene professions. To meet the demands of the ever-changing field of dentistry, students are taught to value life-long learning.

Classroom Policies:
Attendance is mandatory in all lectures, labs and clinical sessions.

Grading
Course and lab/clinic grades are based on a variety of activities and assignments designated by the faculty. The criteria by which grades for each lecture and clinical course are included in the course syllabus distributed to students. Students have access to and should review the learning management system grading calculation method.

Students are responsible to know what their grades are during the course. Please review the gradebook frequently. If an assignment or exam in the student's gradebook says the assignment or exam has not been submitted or has not been entered, it is then treated as a fact the student didn't do the assignment or exam as outlined in the directions. Make sure your assignments are submitted before the due date to assure timely submission. Please see your Dakota Dental Program handbook for grading policies, in addition to the policies listed below.

Grades
Students must earn a minimum grade of "C" with a maintained 2.0 GPA or better in all required dental program courses. Students who fail a theory or lab/clinical course will be dismissed from the dental assisting program. A final grade of "D" or "F" is considered to be a failed grade. If a student has unsatisfactory grades, he/she should contact the instructor as soon as possible for a remediation plan.

Assignments/Tests/Labs/Clinics: All assignments must be completed and submitted on time in the manner specified by the faculty. Students may fail the course if all assignments are not completed.

Late/makeup work: Late work will not be accepted (student will receive a zero) unless previously arranged with the instructor or impacted by extenuating circumstances. Upon approval, if an assignment is turned in within one week of the due date, there will be a 5% deduction from the assignment grade. Extenuating circumstances will be evaluated by the faculty for the course.

Late tests: If the student fails to take a test on time, he/she will need to contact the instructor to arrange a time to take the exam. There will be a 10% deduction from the test grade, for tests taken late. If a test isn't taken within a week of the test date, you will receive a zero for that test. Extenuating circumstances will be evaluated by the faculty for the course.

This course will be evaluated by:

Graded Assignments

The student must earn 75% or above to pass each case study assignment.

Case Study Chapter	Number of points available	Points needed to earn 75%
Chapter 1 Radiation History	7	6/7
Chapter 2 Radiation Physics	10	8/10
Chapter 3 Radiation Biology	6	5 /6
Chapter 4 Radiation Protection	8	6/8
Chapter 5 Radiation Characteristics	8	6/8
Chapter 6: Dental X-ray Equipment	6	5 /6
Chapter 7: Dental X-ray Equipment	6	5/6
Chapter 8: Digital Imaging	6	5/6
Chapter 9: Dental X-ray Film	10	6/8
Chapter 10: Film Processing	14	11/14
Chapter 11: Film Mounting and Viewing	8	6/8
Chapter 12: Dental Images and the Radiographer	9	7/9
Chapter 13: Patient Relations and the Radiographer	9	7/9
Chapter 14: Patient Education and the Dental Radiographer	10	8/10
Chapter 15: Legal Issue and the Radiographer	12	9/12
Chapter 17: Quality Assurance in the Dental Office	11	8/11
Chapter 18: Introduction to Dental Imaging Examinations	4	¾
Chapter 19: Paralleling Technique	18	14/18
Chapter 20: Bisecting Technique	15	11/15
Chapter 21: Bite-Wing Technique	13	10/13
Chapter 22: Exposure and Technique Errors	6	5/6
Chapter 23: Occlusal and Localization Techniques	8	6/8
Chapter 24: Imaging of Patients with Special Needs	11	8/11
Chapter 25: Panoramic Imaging	11	8/11
Chapter 26: Extraoral Imaging	9	7/9
Chapter 27: 3-D Digital Imaging	8	6/8

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Chapter 28: Normal anatomy: Intraoral Images	11	8/11
Chapter 29: Normal Anatomy: Panoramic Images	16	12/16
Chapter 30: Intro. to Image Interpretation	8	6/8
Chapter 31: Descriptive Terminology	11	8/11
Chapter 32: Identification of Restorations, Dental Materials, and Foreign Objects	7	5/7
Chapter 33: Interpretation of Dental Caries	12	9/12
Chapter 34: Interpretation of Periodontal Disease	5	4/5
Chapter 35: Interpretation of Trauma, Pulpal Lesions and Periapical Lesions	11	8/11
Total points for case studies	**324**	

This final course grade will be calculated by the percentages in the chart below:

Final course grade calculation	**Percentage of final grade**	**Points possible**	**Percentage calculated**
Graded Assignments	35%	329	115
Chapter Tests	50%	495	248
Final Exam	15%	100	15
Total points for the course	**100%**		**378**

The dental program student must earn a letter grade of "C" or above in this course to continue in the program.

The following grade scale will be used:

A	92 - 100	347 and above
B	84 – 91	318 -347
C	75 – 83	284 - 346
D	67 – 74	283 and below
F	Below 67	

Classroom Etiquette*:*

- Be punctual to lectures, labs and clinics
- Avoid any activity that may cause distraction during class.
- Incivility will not be tolerated

- Use of mobile devices and related applications and cameras are not allowed to be used, unless it is for a class activity.
- Children are not allowed in the classroom.

Active Learning*:*
In addition to educational strategies such as reading, listening and reflecting, when appropriate this class makes use of learning techniques commonly known as active learning. Students should expect to participate in active learning techniques such as discussions and presentations, small group activities, writing, problem-solving, case studies, role-playing, etc. These activities promote analysis, synthesis, and evaluation of class content in order to improve student learning outcomes.

Course Study Expectations*:*
Commitment to learning is important to success. For every semester credit you are taking in a class, (e.g., 3 credit course = 9 hours per week) the student should schedule three hours to read, study, and devote to your course, outside of class.

Attendance Policy*:*
The Dakota College Dental Programs support the college policy on attendance as stated in your college catalog. The dental programs implement strict attendance policies for classroom, lab and clinical experience. Students are expected to attend all lecture, lab and clinical hours. (See the Attendance Policy in the Dental Program Handbook)

Regular, punctual attendance demonstrates professional behavior and responsibility. Absences may make it impossible for a student to meet course objectives and may result in failure of the course. A student may be excused from class, lab or clinic with the approval of the instructor. It is the student's responsibility to make arrangements to fulfill missed assignments with the appropriate faculty member. All makeup work may have a deduction in lecture, lab or clinic. All missed hours in lab or clinic must be made up with one hour for each hour missed. If a student has more than 25% absence in any classroom, lab or clinic session, it may result in course failure. **If you must be absent, (e.g., illness) please inform the instructor as soon as possible.** The instructor's contact information is on the first page of this syllabus.

Questions:
If you have questions or need clarification on anything to do with this course, please reach out to the instructor. The instructor can be reached by the contact information on the syllabus.

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.

Topic Schedule Radiology Lecture
Fall Semester

Week 1 Ch. 1 and 2 **Chapter Competencies and Course Objective:** 1
Ch. 1 Radiation History 1. Define the key terms associated with dental radiation. 2. Summarize the importance of dental images. 3. List the uses of dental images. 4. Summarize the discovery of x-radiation. 5. Recognize the pioneers in dental x-radiation and their contributions and discoveries. 6. List the highlights in the history of x-ray equipment and film. 7. List the highlights in the history of dental radiographic techniques. Ch. 2 Radiation Physics

1. Define the key terms associated with radiation physics.
2. Identify the structure of the atom.
3. Describe the process of ionization.
4. Discuss the difference between radiation and radioactivity.
5. List the two types of ionizing radiation and give examples of each.
6. List the characteristics of electromagnetic radiation.
7. List the properties of x-radiation.
8. Identify the component parts of the x-ray machine.
9. Label the parts of the dental x-ray tube head and the dental x-ray tube.
10. Describe in detail how dental x-rays are produced.
11. List and describe the possible interactions of x-rays with matter.

Week 1 Ch. 1 and 2
Student Preparation/Assignments

Class 1

1. Read Ch. 1 Radiation History
2. Attend Lecture and participate in class activities, use attached handout to take notes
3. Complete Case Studies for Ch. 1. Upload to BB.
4. Answer questions in textbook 1 - 25 before next class

Class 2

1. Read Ch. 2 Radiation Physics
2. Attend Lecture and participate in class activities, use attached handout to take notes
3. Complete Case Studies for Ch. 2. Upload to BB.
4. Answer quiz and multiple-choice questions at end of the chapter

Class 3

1. Complete Assignment on BB- Case Studies.
2. Review chapters 1 & 2 and bring any questions to class
3. Take Self-Study Examination Review Questions for Ch. 1 and 2 on Evolve Online Student Resources
4. Study and take for online test Ch. 1 & 2 at the end of Week 2

Week 2 Ch. 3 and 4
Chapter Competencies and Course Objectives 2

Ch. 3 Radiation Biology

1. Define the terms associated with radiation injury.
2. Describe the mechanisms and theories of radiation injury.
3. Define and discuss the dose-response curve and radiation injury.

4. Describe the sequence of radiation injury and list the determining factors for radiation injury.
5. Discuss the short-term and long-term effects and the somatic and genetic effects of radiation exposure.
6. Describe the effects of radiation exposure on cells, tissues, and organs and identify the relative sensitivity of a given tissue to x-radiation.
7. Define the units of measurement used in radiation exposure.
8. List common sources of radiation exposure.
9. Discuss risk and risk estimates for radiation exposure.
10. Discuss dental radiation and exposure risks.
11. Discuss the risk versus benefit of dental images.

Ch. 4 Radiation Protection

1. Define the key terms associated with radiation protection.
2. Describe in detail the basics of patient protection before x-ray exposure.
3. Discuss the different types of filtration, and state the recommended total filtration for dental x-ray machines operating above and below 70kV.
4. Describe the collimator used in dental x-ray machines and state the recommended diameter of the useful beam at the patient's skin.
5. List six ways to protect the patient from excessive radiation during x-ray exposure.
6. Describe the importance of receptor handling and processing after patient exposure to x-radiation.
7. Discuss operator protection in terms of adequate distance, shielding, and avoidance of the useful beam.
8. Describe personnel and equipment monitoring devices used to detect radiation.
9. Discuss radiation exposure guidelines, including radiation safety legislation, maximum permissible dose (MPD), and the ALARA concept.
10. Discuss with the dental patient radiation protection steps used before, during, and after exposure to x-radiation.

Week 2 Ch. 3 and 4
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 3 Radiation Biology
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the Case Study Questions for Ch. 3. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 4 Radiation Protection

2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the Case Study Questions for Ch. 4. Upload to BB.
4. Watch the Ch. 4 interactive technique videos and Q & A on Evolve Online Student Resources.
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Complete Assignment: Answer Case Study Discussion Question and submit to BB.
2. Bring any questions on Ch. 3 and 4 to class for clarification
3. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
4. Study for and take online test Ch. 3 & 4

Week 3 Ch. 5 and 6
Chapter Competencies and Course Objective 1

Ch. 5 Radiation Characteristics

1. Define the key terms associated with radiation characteristics.
2. Describe the effect that the kilovoltage has on the quality of the x-ray beam and identify the range of kilovoltage required for dental imaging.
3. Describe how kilovoltage affects the density and contrast of the image.
4. Describe how milliamperage influences the quantity of the x-ray beam and identify the range of milliamperage required for dental imaging.
5. Describe how milliamperage affects the density of the image and how exposure time and milliamperage are related.
6. Describe how kilovoltage, milliamperage, exposure time, and source-to-receptor distance influence the intensity of the x-ray beam.
7. Calculate an example of radiation intensity using the inverse square law.
8. Explain how the half-value layer determines the penetrating quality of the x-ray beam.

Ch. 6 Dental X-Ray Image Characteristics

1. Define the key terms associated with image characteristics.
2. Differentiate between radiolucent and radiopaque areas on a dental image.
3. Describe a diagnostic dental image.
4. List the two visual characteristics of the radiographic image.
5. List the factors that influence density and contrast.
6. Discuss the difference between high contrast and low contrast.
7. Describe film contrast and subject contrast.
8. Describe the difference between short-scale contrast and long-scale contrast.
9. Identify images of high contrast, low contrast, no contrast, short-scale contrast, and long-scale contrast.

10. Describe a step wedge and explain its function.
11. List the three geometric characteristics of the radiographic image.
12. List the factors that influence sharpness, magnification, and distortion.

Week 3 Ch. 5 and 6
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 5
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the Case Studies for Ch. 5. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 6
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the Case Studies for Ch. 6. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions to class for clarification.
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study and take online test on Ch. 5 and 6.

Week 4 Ch. 7 and 8
Chapter Competencies and Course Objective 3

Ch. 7 Dental X-ray Equipment

1. Define the key terms associated with dental x-ray equipment.
2. Discuss the regulation of dental x-ray machines at the federal, state, and local levels.
3. Recognize dental x-ray machines used for intraoral and extraoral exposures.
4. Describe a portable dental x-ray unit and how operator exposure is limited during use.
5. Identify the component parts of the dental x-ray machine.
6. Describe the purpose and use of dental x-ray receptor holders, beam alignment devices, and collimating devices.
7. Identify commonly used dental x-ray receptor holders, beam alignment devices, and collimating devices.

Ch. 8 Digital Imaging

1. Define the key terms associated with digital imaging.
2. Describe the purpose and use of digital imaging.
3. Discuss the fundamentals of digital imaging.
4. Describe radiation exposure in digital imaging.
5. List and describe the equipment used in digital imaging.
6. List and describe the two types of digital imaging.
7. Describe the patient and equipment preparations required for digital imaging.
8. List and discuss the advantages and disadvantages of digital imaging.

Week 4 Ch. 7 and 8
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 7
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete interactive exercises for film holding devices on Evolve Online Student Resources
4. Complete the case studies for Ch. 7 and upload to BB
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 8
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete interactive exercises for Digital Radiography on Evolve Online Student Resources
4. Complete the case studies for Ch. 8 and upload to BB
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Answer Review questions on Ch. 7 and Ch. 8 on Evolve Online Student Resources
2. Bring any questions on Ch. 7 and 8 to class for clarification
3. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
4. Study for and take online Test Ch. 7 & 8

Week 5 Ch. 9 and 10
Chapter Competencies and Course Objective 4

Ch. 9 Dental X-Ray Film

1. Define the terms associated with dental x-ray film.

2. Discuss why the radiographer should be familiar with dental x-ray film.
3. Describe film composition and latent image formation.
4. List the different types of x-ray film used in dentistry.
5. Define intraoral film and describe intraoral film packaging.
6. Identify the types and sizes of intraoral film available.
7. Discuss film speed.
8. Define extraoral film and describe extraoral film packaging.
9. Discuss the differences between intraoral film and extraoral film and identify the types of extraoral film available.
10. Describe the difference between screen and nonscreen films.
11. Describe the use of intensifying screens and cassettes.
12. Describe duplicating film.
13. Discuss proper film storage and protection

Ch. 10 Film Processing

1. Define the key terms associated with processing of dental x-ray film.
2. Briefly describe how a latent image becomes a visible image.
3. Discuss the advantages of automatic film processing.
4. List and identify the component parts of the automatic film processor.
5. Describe the mechanism of automatic film processing.
6. List and discuss the four procedural steps for automatic film processing.
7. Describe the care and maintenance of the automatic film processor and automatic processing solutions.
8. List and discuss the five steps of manual film processing.
9. List the four basic ingredients of the developer solution.
10. List the four basic ingredients of the fixer solution.
11. Identify the parts of the processing tank: insert tanks, master tank, and lid.
12. Identify the equipment accessories needed for manual film processing.

Ch. 10 Processing Solutions, Equipment, and Film Processing Problems

13. List the procedural steps for manual film processing
14. Describe the care and maintenance of the processing solutions, equipment, and equipment accessories used in manual film processing.
15. Discuss the primary function of the darkroom, as well as the location and size requirements necessary for the darkroom.
16. Discuss room lighting and safe lighting.
17. Discuss miscellaneous requirements necessary in the darkroom.
18. Discuss waste management of items used in the darkroom.
19. Discuss the equipment requirements and procedural steps for film duplication.
20. Describe film processing problems that result from time and temperature errors.
21. Describe film processing problems that result from chemical contamination errors.
22. Describe film processing problems that result from film handling errors.

23. Describe film processing problems that result from lighting errors.

Week 5 Ch. 9 and 10
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 9
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the case studies for Ch. 9. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 10
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 10. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions you have to class for discussion.
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 9 and 10

Week 6 Ch. 11 and 12
Chapter Chapter Competencies and Course Objectives 4 and 5

Ch. 11 Film Mounting and Viewing

1. Define the key terms associated with film mounting and viewing.
2. Do the following related to film mounting:
    - Define film mounting.
    - List the individuals who are qualified to mount and view dental radiographs.
    - Describe when and where films are mounted.
    - List several reasons to use a film mount.
    - Describe what information is placed on a film mount.
    - Describe how mounts are used with digital imaging.
3. Discuss the importance of normal anatomy in film mounting.
4. Describe how the identification dot is used to determine film orientation.
5. List and describe two methods of film mounting and identify the preferred method.
6. List and describe the step-by-step procedures for film mounting.
7. Do the following related to viewing film:
    - List the individuals who are qualified to view film.

- List and describe the necessary equipment for film viewing.
- Discuss the importance of masking extraneous viewbox light seen around a film mount.
- Describe optimal viewing conditions, as well as when and where images should be viewed.
- Explain the importance of examining images in an established viewing sequence.

8. List and describe the step-by-step procedures for film viewing and explain why multiple viewings of dental images are necessary, as well as list the areas, diseases, and abnormalities that must be included in the examinations.

Ch. 12 Dental Images and the Dental Radiographer

1. Define the key terms associated with dental images.
2. Discuss the importance of dental images.
3. List the uses of dental images.
4. Discuss the benefits of dental images.
5. List examples of common dental conditions that may be evident on a dental image.
6. Discuss the knowledge and skill requirements of the dental radiographer.
7. List the duties and responsibilities that may be assigned to the dental radiographer.
8. Discuss the professional goals of the dental radiographer

Week 6 Ch. 11 and 12
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 11 Film Mounting and Viewing
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the film mounting interactive activities on Evolve Online Student Resources.
4. Complete case study questions for Ch. 11. Upload to BB.
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 12 Patient Relations and the Dental Radiographer
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case study questions for Ch. 11. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 11 and 12 to class for clarification

2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 11 and 12

Week 7 Ch. 13, 14, and 15
Chapter Competencies and Course Objectives 5 and 11

Ch. 13 Patient Relations and the Dental Radiographer

1. Define the key terms associated with patient relations.
2. Discuss verbal, nonverbal, and listening skills, and explain how each can be used to enhance communication.
3. Discuss how facilitation skills can be used to enhance patient trust.
4. Define a relationship of trust between the dental professional and the patient.
5. Discuss the importance of first impressions, chairside manner, and attitude and explain how each can enhance patient relations.

Ch. 14 Patient Education and the Dental Radiographer

1. Define the key terms associated with patient education.
2. Summarize the importance of educating patients about dental images.
3. List the three methods that can be used by the dental radiographer to educate patients about dental images.
4. Answer common patient questions about the need for dental images, x-ray exposure, the safety of dental x-rays, digital imaging, and other miscellaneous concerns.

Ch. 15 Legal Issues and the Dental Radiographer

1. Define key terms associated with legal issues.
2. List federal and state regulations affecting the use of dental x-ray equipment and describe the general application of federal and state regulations relating to the dental auxiliary.
3. Describe licensure requirements for exposing dental images.
4. Discuss risk management and define the legal concept of informed consent.
5. Describe ways to obtain informed consent from a patient.
6. Discuss dental malpractice issues, including negligence and standard of care.
7. Discuss the concept of statute of limitations and the legal significance of the dental record.
8. Discuss how confidentiality laws affect the information in the dental record.
9. Describe the patient's rights with regard to the dental record.
10. Describe the legal implications of patient refusal to have dental x-ray images exposed.

Week 7 Ch. 13, 14, and 15
Student Preparation/Assignments

For Monday's Class

1. Read Chapters 13 and 14
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case study questions for Ch. 13 and 14. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 15
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case study questions for Ch. 15. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 13- 15 to class for clarification
2. Complete online Discussion on BB.
3. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
4. Study for and take online Test Ch. 13, 14, 15

Week 8 Ch. 17 and 18
Chapter Competencies and Course Objectives 5 and 6

Ch. 17 Quality Assurance in the Dental Office

1. Define the key terms associated with quality assurance in the dental office.
2. List quality control tests and quality administration procedures that should be included in the quality assurance plan.
3. Discuss the purpose and frequency of testing dental x-ray machines.
4. Describe the tests used to check for fresh film and adequate screen-film contact; discuss the frequency of testing and the interpretation of test results.
5. Describe the test used to check for darkroom light leaks and proper safe lighting; discuss the frequency of testing and the interpretation of test results.
6. Describe the test used to check the automatic processor; discuss the frequency of testing and the interpretation of test results.
7. List the three tests used to check the strength of the developer solution.
8. Describe the preparation of the reference radiograph and the standard step wedge radiograph; discuss the use of these radiographs to compare densities and to monitor the strength of the developer solution.
9. Describe the test used to check the strength of the fixer; discuss the frequency of testing and the interpretation of test results.
10. Discuss quality control tests needed for digital imaging procedures.
11. Discuss the basic elements of a quality administration program.

12. Detail the importance of operator competence in dental radiographic procedures.

Ch. 18 Introduction to Dental Imaging Examinations

1. Define the key terms associated with dental imaging examinations.
2. List the three types of intraoral imaging examinations.
3. Describe the purpose, the type of receptor, and the technique used for each of the three types of intraoral imaging examinations.
4. List the various projections that constitute a complete mouth series (CMS).
5. List the general diagnostic criteria for intraoral images.
6. List examples of extraoral imaging examinations.
7. Discuss the prescribing of dental images.
8. Describe when prescribing a CMS for a new patient is warranted.

Week 8 Ch. 17 and 18
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 17
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the case study questions Ch. 17. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 18
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the case study questions Ch. 18. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 17 and 18 to class for clarification
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 17 and 18

Week 9 Chapter 19, 20, and 21
Chapter Competencies and Course Objectives 6

Ch. 19: Paralleling Technique

1. Define the key terms associated with the paralleling technique.

2. State the basic principle of the paralleling technique and illustrate the placement of the receptor, beam alignment device, position-indicating device (PID), and central ray.
3. Discuss how object-receptor distance affects the image and how target-receptor distance is used to compensate for such changes.
4. Describe why a beam alignment device is necessary with the paralleling techniques.
5. List the beam alignment devices that can be used with the paralleling technique
6. Identify and label the parts of the Rinn XCP instruments.
7. Describe the different sizes of receptors used with the paralleling technique and how each receptor is placed in the bite-block.
8. State the five basic rules of the paralleling technique.
9. Describe the patient and equipment preparations that are necessary before using the paralleling technique.
10. Discuss the exposure sequence for 15 periapical receptor placements using the paralleling technique; describe each of the 15 periapical receptor placements recommended for use with the Rinn XCP instruments.
11. Summarize the guidelines for periapical receptor positioning.
12. Explain the modifications in the paralleling technique that are used for a patient with a shallow palate, bony growths, or a sensitive premolar region.
13. List the advantages and disadvantages of the paralleling technique.

Ch. 20 Bisecting Technique

1. Define the key terms associated with the bisecting technique.
2. State the rule of isometry.
3. State the basic principles of the bisecting technique and illustrate the location of the receptor, tooth, imaginary bisector, central ray, and position-indicating device (PID).
4. List the beam alignment devices and receptor holders that can be used with the bisecting technique.
5. Describe the receptor size used with the bisecting technique.
6. Describe correct and incorrect horizontal angulation.
7. Describe correct and incorrect vertical angulation.
8. State each of the recommended vertical angulation ranges used for periapical exposures in the bisecting technique.
9. State the basic rules of the bisecting technique.
10. Describe patient and equipment preparations necessary before using the bisecting technique.
11. Discuss the exposure sequence used for the 14 periapical receptor placements used in the bisecting technique.
12. Describe each of the 14 periapical receptor placements recommended for use in the bisecting technique.
13. List the advantages and disadvantages of the bisecting technique.

Ch: 21 Bite-Wing Technique

1. Define the key terms associated with the bite-wing technique.
2. Describe the purpose and use of the bite-wing image.
3. Describe the appearance of opened and overlapped contact areas on a bite-wing image.
4. State the basic principles of the bite-wing technique.
5. List the two ways a receptor can be stabilized in the bite-wing technique and identify which one is recommended for bite-wing exposures.
6. List the three receptor sizes that can be used in the bite-wing technique and identify which size is recommended for exposures in the adult patient.
7. Describe correct and incorrect horizontal angulation.
8. Describe the difference between positive and negative vertical angulation.
9. State the recommended vertical angulation for all bite-wing exposures using a bite-wing tab.
10. State the basic rules for the bite-wing technique.
11. Describe patient and equipment preparations that are necessary before using the bite-wing technique.
12. Discuss the exposure sequence for a complete mouth series (CMS) that includes both periapical and bite-wing exposures.
13. Describe the correct premolar and molar bite-wing receptor placements.
14. Describe the purpose and use of vertical bite-wing images.
15. List the number of exposures and the size of receptor used in the vertical bite-wing technique.
16. Discuss modifications in the bite-wing technique for patients who have had teeth extracted for orthodontic purposes, or in patients with edentulous spaces or bony growths.

Week 9 Ch. 19, 20, 21
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 19 and 20
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the interactive activities on Evolve Online Student Resources
4. Complete case studies for Ch. 19 and 20. Upload to BB.
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

6. Read Ch. 21
7. Attend Lecture and participate in class activities, use attached handout for taking notes
8. Complete Interactive Exercises in Evolve Online Student Resources

9. Complete case studies for Ch. 21. Upload to BB.
10. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

11. Bring any questions on Ch. 19, 20, and 21 to class for clarification
12. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
13. Study for and take online Test Ch. 19, 20 and 21

Week 10 Chapter 22, 23, 24
Chapter Competencies and Course Objective 8

Ch. 22: Exposure Errors, Angulation, and Periapical Technique Errors

1. Define the key terms associated with exposure and technique errors.
2. Identify and describe the appearance of the following exposure errors: unexposed receptor, film exposed to light, overexposed receptor, and underexposed receptor.
3. Identify and describe the appearances of the following periapical technique errors caused by receptor placement: absence of apical structures and dropped receptor corner.
4. Describe horizontal and vertical angulation.
5. Identify and describe the appearances of the following periapical technique errors caused by angulation problems: incorrect horizontal angulation (overlapped contacts), incorrect vertical angulation (foreshortened images and elongated images), and incorrect beam alignment (cone-cut images).

Chapter 22.2: Bite-Wing and Miscellaneous Technique Errors

6. Describe and identify proper receptor placement for bite-wing images.
7. Identify and describe the appearances of the following bite-wing technique errors caused by receptor placement: incorrect placement of premolar bite-wing and incorrect placement of molar bite-wing.
8. Identify and describe the appearances of the following bite-wing technique errors caused by angulation problems: incorrect horizontal angulation (overlapped contacts), incorrect vertical angulation (distorted image), and incorrect position-indicating device (PID) alignment (cone-cut images).
9. Identify and describe the appearances of the following miscellaneous technique errors: bending, creasing, debris accumulation, phalangioma, double image, movement, reversed/backward placement, and wired cable issues.

Ch. 23: Occlusal and Localization Techniques

1. Define the key terms associated with occlusal and localization techniques.
2. Describe the purpose of occlusal examination.
3. List the uses of occlusal examination and discuss the basic principles involved.

4. Describe the patient and equipment preparations that are necessary before using the occlusal technique.
5. State the recommended vertical angulations for the following maxillary occlusal projections: topographic, lateral (right or left), and pediatric.
6. State the recommended vertical angulations for the following mandibular occlusal projections: topographic, cross-sectional, and pediatric.
7. State the purpose of localization techniques and list their uses.
8. Describe the buccal object rule.
9. Describe the right-angle technique.
10. List the patient and equipment preparations that are necessary before using the buccal object rule or the right-angle technique.
11. Describe receptor placements for the buccal object rule and compare the resulting images.
12. Describe receptor placements for the right-angle technique and compare the resulting images.

Lesson 24: Imaging of Patients with Special Needs

1. Define the key terms associated with patients who have special needs.
2. List the areas of the oral cavity that are most likely to elicit the gag reflex when stimulated.
3. List two precipitating factors responsible for initiating the gag reflex.
4. Describe how to control the gag reflex using operator attitude, patient and equipment preparations, exposure sequencing, and receptor placement and technique.
5. Describe common physical disabilities and what modifications in technique may be necessary during the imaging examination.
6. Describe common developmental disabilities and what modifications in technique may be necessary during the imaging examination.
7. List helpful hints that can be used when treating a person with a disability.
8. Describe the tooth eruption sequences, prescribing of dental images, recommended techniques, types of examinations, digital sensor issues, patient and equipment preparation, and patient management pertaining to the pediatric dental patient.
9. Describe the use of receptor placement modifications and recommended periapical technique during endodontic (root canal) procedures.
10. Describe the purposes of the imaging examination in the edentulous patient.
11. List and describe the three types of imaging examination that may be used for the edentulous patient.

Week 10 Ch. 22, 23, 24
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 22 and 23

2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete Interactive Exercises in Evolve Online Student Resources on SLOB rule.
4. Complete the case studies for Ch. 22 and 23. Upload to BB.
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 24
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. View the interactive exercises in Evolve Online Student Resources on Imaging of Patients.
4. Complete the case studies for Ch. 24. Upload to BB.
5. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 22, 23, 24 to class for clarification
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 22, 23, and 24

Week 11 Ch. 25, 26, 27
Chapter Competencies and Course Objective 7

Ch. 25: Panoramic Imaging

1. Define the key terms associated with panoramic imaging.
2. Describe the purpose and uses of panoramic imaging.
3. Describe the fundamentals of panoramic imaging.
4. Describe the equipment used in panoramic imaging.
5. Describe patient preparation, equipment preparation, and patient positioning procedures needed before exposing a panoramic projection.
6. Describe a diagnostic panoramic image.
7. Identify the patient preparation and patient positioning errors seen on panoramic images, discuss the causes of these errors, and describe the necessary measures needed to correct such errors.
8. Discuss the advantages and disadvantages of panoramic imaging.

Ch. 26: Extraoral Imaging

1. Define the key terms associated with extraoral imaging.
2. Describe the purpose and uses of extraoral imaging.
3. Describe the equipment used in extraoral imaging.

4. Detail the equipment and patient preparations necessary before exposing an extraoral projection.
5. Identify the purpose and describe the head position, the receptor placement, and the beam alignment for each of the following extraoral projections: lateral jaw projection – body of the mandible, lateral jaw projection – ramus of the mandible, lateral cephalometric projection, posteroanterior projection, Waters projection, submentovertex projection, reverse Towne projection, extraoral bite-wing images, and transcranial projection.

Ch. 27: Three-Dimensional Digital Imaging

1. Define the key terms associated with three-dimensional digital imaging.
2. Describe the fundamentals of three-dimensional digital imaging.
3. Describe the training needed and equipment used in three-dimensional digital imaging.
4. Discuss the common uses of three-dimensional digital imaging.
5. Detail the equipment and patient preparation necessary before exposure to x-radiation using three-dimensional digital imaging.
6. Identify advantages and disadvantages of three-dimensional digital imaging.

Week 11 Ch. 25, 26, 27
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 25 and 26
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the case studies for Ch. 25 and 26. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 27
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete the case studies for Ch. 27. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 25, 26, and 27 to class for clarification
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 25, 26, 27

Week 12 Ch. 28 and 29
Chapter Competencies and Course Objective 9

h. 28.1: Differences in Bones and Normal Anatomic Landmarks of the Maxilla

1. Define the key terms associated with normal anatomy on intraoral images.
2. State the difference between cortical and cancellous bone.
3. Define and discuss the general terms that describe prominences, spaces, and depressions in bone.
4. In relation to normal anatomic landmarks of the maxilla on a human skull:

- Identify and describe the normal anatomic landmarks of the maxilla on a human skull.
- Identify and describe the normal anatomic landmarks of the maxilla as viewed on dental images.
- Identify each normal landmark of the maxilla as either radiolucent or radiopaque as viewed on dental images.

Ch. 28.2: Normal Anatomic Landmarks of the Mandible and Tooth Anatomy

5. In relation to normal anatomic landmarks of the mandible on a human skull:

- Identify and describe the normal anatomic landmarks of the mandible on a human skull.
- Identify and describe the normal anatomic landmarks of the mandible as viewed on dental images.
- Identify each normal landmark of the mandible as either radiolucent or radiopaque as viewed on dental images.

6. Identify and describe the appearance of normal tooth anatomy and supporting structures as viewed on dental images; identify each normal tooth structure as radiolucent or radiopaque as viewed on dental images.
7. Identify the primary teeth and eruption patterns of the permanent teeth as viewed on dental images.

Lesson 29.1: Normal Anatomy and Bony Landmarks of the Maxilla on Panoramic Images

1. Define the key terms associated with normal anatomy on panoramic images.
2. Identify and describe the bony landmarks of the maxilla and surrounding structures as viewed on the panoramic image.

Lesson 29.2: Bony Landmarks of the Mandible and Spaces on Panoramic Images

3. Identify and describe the bony landmarks of the mandible and surrounding structures as viewed on the panoramic image.
4. Identify air spaces as viewed on the panoramic image.

5. Identify soft tissues as viewed on the panoramic image.

Week 12 Ch. 28 and 29
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 28
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 28. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 29
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 29. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 28 and 29 to class for clarification
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 28 and 29

Week 13 Ch. 30 and 31
Chapter Competencies and Course Objective 10

Lesson 30.1: Introduction to Image Interpretation

1. Define the key terms associated with interpreting images.
2. Summarize the importance of the interpretation of images.
3. Describe who is able to interpret images by defining the roles of the dentist and the dental auxiliary in the interpretation of dental images.
4. Discuss the difference between interpretation and diagnosis.
5. Describe when and where dental images are interpreted.
6. Discuss the sequence for interpreting images.
7. Describe how interpretation is documented.
8. Describe how interpretation can be used to educate the dental patient about the importance and use of dental images.

Lesson 31.1: Descriptive Terminology

1. Define descriptive terminology, describe why the dental professional should use descriptive terms, and differentiate between descriptive terminology and diagnosis.
2. Compare and contrast the terms *radiolucent* and *radiopaque.*
3. In relation to how to describe radiolucent lesions:

- Identify radiolucent lesions on a dental image in terms of appearance, location, and size.
- Define and discuss the terms *unilocular* and *multilocular*.
- Define and discuss the terms *periapical, inter-radicular, edentulous zone, pericoronal,* and *alveolar bone loss* in relation to radiolucent lesions.

4. In relation to how to describe radiopaque lesions:

- Identify radiopaque lesions on a dental image in terms of appearance, location, and size.
- Define and discuss the terms *focal opacity, target lesion, multifocal confluent pattern, irregular/ill-defined opacity, ground glass opacity, mixed lucent-opaque lesion* and *soft tissue opacity*.
- Define and discuss the terms *periapical, inter-radicular, edentulous zone,* and *pericoronal* in relation to radiopaque lesions.

Week 13 Ch 30 and 31
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 30
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 30. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 31
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 31. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 30 and 31 to class for clarification
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources

3. Study for and take online Test Ch. 30 and 31

Week 14 Ch. 32 and 33
Chapter Competencies and Course Objective 10

Lesson 32.1: Identification of Restorations, Dental Materials, and Foreign Objects

1. Define the key terms associated with identifying restorations, materials, and foreign objects on dental images.
2. Discuss the importance of interpreting dental images while the patient is present.
3. On dental images, identify and describe the appearance of the following restorations: amalgam, gold, stainless steel and chrome, post and core, porcelain, porcelain-fused-to-metal, composite, and acrylic.
4. On dental images, identify and describe the appearance of the following: base materials, metallic pins, gutta percha, silver points, complete dentures, removable partial dentures, orthodontic bands, brackets and wires, fixed orthodontic retainers, dental implants, bone grafts, suture wires, metal splints and plates, bone screws, and stabilizing arches.
5. On dental images, identify and describe the appearance of the following: earrings, necklaces, nose jewelry, oral piercings, eyeglasses, patient napkin chains, hearing aids, shrapnel, and other miscellaneous objects.

Lesson 33.1: Interpretation of Dental Caries

1. Define the key terms associated with the interpretation of dental caries.
2. Describe dental caries.
3. In relation to the detection of dental caries:

- Explain why caries appears radiolucent on a dental image.
- Discuss the importance of dental caries in relation to the clinical examination.
- Discuss the importance of dental caries in relation to the dental image examination.

4. Discuss interpretation tips for evaluating caries on a dental image.
5. Discuss the factors that may influence the image interpretation of dental caries.
6. In relation to classifying caries on dental images:

- Detail the classification of caries on dental images.
- On a dental image, identify and describe the appearance of the following: incipient, moderate, advanced, and severe interproximal caries.
- On a dental image, identify and describe the appearance of the following: incipient, moderate, and severe occlusal caries.
- On a dental image, identify and describe the appearance of the following: buccal, lingual, root surface, recurrent, and rampant caries.

7. On a dental image, identify conditions that may be confused with dental caries including cervical burnout, restorative materials, attrition, and abrasion.

Week 14 Ch. 32 and 33
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 32
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 32. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 33
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 33. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Friday's Class

1. Bring any questions on Ch. 32 and 33 to class for clarification
2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources
3. Study for and take online Test Ch. 32 and 33

Week 15 Ch. 34 and 35
Chapter Competencies and Course Objective 10

Chapter 34.1: Interpretation of Periodontal Disease

1. Define the key terms associated with interpreting periodontal disease.
2. Describe the healthy periodontium.
3. Briefly describe periodontal disease and the progression to disease.
4. In relation to the detection of periodontal disease:

- Discuss the importance of the clinical examination.
- Discuss the importance of dental image examination, including different techniques used.
- Describe the limitations of dental images in the detection of periodontal disease.
- Describe the type of dental images that should be used to document periodontal disease and the preferred exposure technique.

5. In relation to the interpretation of periodontal disease on dental images:

- State the difference between horizontal bone loss and vertical bone loss.
- State the difference between localized bone loss and generalized bone loss.
- State the differences among mild, moderate, and severe bone loss.

6. Discuss the characteristics described in the 2018 Classification of Periodontal and Peri-implant Diseases (Tonetti et. al. J Periodontal. 2018; 89 (Supp 1): S159-S172 that pertains to the interpretation of dental images.
7. List predisposing factors for periodontal disease and recognize and describe the appearance of calculus on dental images.

Chapter 35.1: Interpretation of Trauma, Pulpal Lesions, and Periapical Lesions

1. Define the key terms associated with the interpretation of trauma, resorption, pulpal and periapical lesions as viewed on a dental image.
2. Describe and identify the appearance of crown, root, and jaw fractures as viewed on a dental image.
3. Describe and identify the appearance of a luxation and an avulsed tooth as viewed on a dental image.
4. Describe and identify the appearance of external and internal resorption as viewed on a dental image.
5. Describe and identify the appearance of pulpal sclerosis, pulp canal obliteration, and pulp stones as viewed on a dental image.
6. Discuss periapical radiolucencies and describe the appearance of periapical granuloma, cyst, and abscess as viewed on a dental image, and explain what is necessary to establish a definitive diagnosis.
7. Discuss periapical radiopacities and describe and identify the appearance of condensing osteitis, sclerotic bone, and hypercementosis as viewed on a dental image.

Week 15 Ch. 34 and 35
Student Preparation/Assignments

For Monday's Class

1. Read Ch. 34
2. Attend Lecture and participate in class activities, use attached handout for taking notes
3. Complete case studies for Ch. 34. Upload to BB.
4. Answer Quiz questions at end of the chapter, bring to next class to review together

For Wednesday's Class

1. Read Ch. 35

2. Attend Lecture and participate in class activities, use attached handout for taking notes 3. Complete case studies for Ch. 35. Upload to BB. 4. Answer Quiz questions at end of the chapter, bring to next class to review together For Friday's Class 1. Bring any questions on Ch. 34 and 35 to class for clarification 2. Complete the Self-Study Exam Review Questions on Evolve Online Student Resources 3. Study for and take online Test Ch. 34 and 35
Week 16 Final Exam (comprehensive)